

Appln No. 09/522,184

Amdt date May 7, 2004

Reply to Office action of January 8, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A signal processing system for processing a plurality of signals ~~having a plurality of signal components~~, each of the plurality of signals components having a different format, the signal processing system comprising:

means for receiving one of the plurality of signals at a respective input port;

means for detecting the format for the received signal;

~~an encoder capable of selectively encoding a first one of the plurality of signal components having a first format;~~

~~a data pump capable of selectively for demodulating a second one of the plurality of signal components, the second one of the plurality of signal components being modulated the received signal, if the detected format for the received signal is a modulated modem data;~~

a voice encoder for encoding the received signal, if the detected format for the received signal indicates a voiceband signal; and

a channel interface capable of selectively outputting onto a packet based network the encoded ~~information~~ voiceband signal and the demodulated information modem data.

2. (Cancelled)

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3. (Currently Amended) The signal processing system of claim 1 wherein the ~~second one of the plurality of signal components~~ received signal has a second format and wherein the second format comprises information modulated by a voiceband carrier.

4. (Original) The signal processing system of claim 1 wherein the encoded information comprises voice signals.

5. (Original) The signal processing system of claim 4 further comprising a voice activity detector which suppresses the voice signals without speech.

6. (Previously Presented) The signal processing system of claim 5 further comprising a comfort noise estimator which generates comfort noise parameters when the voice activity detector suppresses the voice signals, said comfort noise parameters being selectively outputted on the packet based network.

7. (Original) The signal processing system of claim 1 further comprising a decoder capable of decoding packets of information from the packet based network.

8. (Original) The signal processing system of claim 7 wherein the information packets include voice signals, the signal processing system further comprising a voice activity detector which detects the voice signals without speech, and a

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comfort noise generator which inserts comfort noise in place of the voice signals without speech.

9. (Original) The signal processing system of claim 8 further comprising a comfort noise estimator which generates comfort noise parameters from at least a portion of the voice signals without speech, the comfort noise generator being responsive to the comfort noise parameters.

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10. (Original) The signal processing system of claim 7 wherein the information packets include voice signals, the signal processing system further comprising a voice activity detector which detects lost voice signals, and a lost packet recovery engine which processes the voice signals to compensate for the lost voice signals.

11. (Original) The signal processing system of claim 1 further comprising a jitter buffer capable of receiving packets of information of varying delay from the packet based network and compensating for the delay variation of the information packets.

12. (Original) The signal processing system of claim 11 wherein the jitter buffer outputs an isochronous stream of the received information.

13. (Original) The signal processing system of claim 11 wherein the jitter buffer comprises a queue which buffers the

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received information for a holding time, and a voice synchronizer which adaptively adjusts the holding time of the queue.

14. (Currently Amended) A method of processing a plurality of signals ~~having a plurality of signal components~~, each of the plurality of signals ~~components~~ having a different format, the method comprising:

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receiving one of the plurality of signals at a respective input port;

detecting the format for the received signal;

selectively encoding a first one of the plurality of signal components having a first format;

selectively demodulating ~~a second one of the plurality of signal components~~, ~~the second one of the plurality of signal components being modulated~~ the received signal, if the detected format for the received signal indicates a modulated modem data;

selectively encoding the received signal, if the detected format for the received signal indicates a voiceband signal; and

selectively outputting onto a packet based network the encoded ~~information~~ voiceband signal and the demodulated ~~information~~ modem data.

15. (Cancelled)

16. (Currently Amended) The method of claim 14 wherein said ~~second one of the plurality of signal components~~ received

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signal has a second format and wherein the second format comprises information modulated by a voiceband carrier.

17. (Previously Presented) The method of claim 14 wherein the encoded information includes voice signals.

18. (Original) The method of claim 17 further comprising suppressing the voice signals when the voice signals do not comprise speech.

19. (Original) The method of claim 18 wherein the suppression of the voice signals comprises generating comfort noise parameters in place thereof.

20. (Original) The method of claim 14 further comprising receiving information packets of varying delay from the packet based network, and compensating for the delay variation of the information packets.

21. (Original) The method of claim 20 wherein the information packet compensation comprises generating an isochronous stream of the information.

22. (Original) The method of claim 21 wherein the isochronous stream generation comprises adaptively buffering the information.

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23. (Original) The method of claim 14 further comprising receiving packets of voice signals from the packet based network, identifying the received voice signals without speech, and inserting comfort noise in place of the identified voice signals without speech.

24. (Original) The method of claim 23 wherein the comfort noise insertion comprises estimating comfort noise in response to at least a portion of the received voice signals without speech.

25. (Original) The method of claim 14 further comprising receiving packets of voice signals from the packet based network, detecting lost voice signals, decoding the received voice signals, and processing the decoded voice signals to compensate for the lost voice signals.

26. (Currently Amended) A signal transmission system, comprising:

a first telephony device which outputs a ~~first information signal having a first format~~ voiceband signal;

a second telephony device which outputs a ~~second information signal having a second format different from the first format, the second format being a modulated format~~ modem data;

a packet based network; and

a signal processing system coupling the first and the second telephony devices to the packet based network, the signal

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processing system having ~~an~~ a voice encoder which encodes the voiceband signal ~~first information signal having the first format,~~ a data pump for demodulating the modulated modem data, and a channel interface which selectively outputs onto the packet based network the encoded ~~information~~ voiceband signal and ~~a the demodulated form of the second information signal~~ modem data.

27. (Cancelled)

28. (Currently Amended) The signal processing system of claim 26 wherein the ~~second format~~ voiceband signal comprises information modulated by a voiceband carrier.

29. (Original) The signal transmission system of claim 26 further comprising a switched circuit network coupling the first and the second telephony devices to the signal processing system.

30. (Original) The signal transmission system of claim 29 wherein the switched circuit network comprises a public switching telephone network.

31. (Original) The signal transmission system of claim 26 wherein the packet based network comprises internet protocol.

32. (Original) The signal transmission system of claim 26 wherein the packet based network comprises frame relay.

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33. (Original) The signal transmission system of claim 26 wherein the packet based network comprises asynchronous transfer mode.

34. (Original) The signal transmission system of claim 26 wherein the packet based network comprises a time division multiplexing network.

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35. (Original) The signal transmission system of claim 26 wherein the first telephony device comprises a telephone.

36. (Original) The signal transmission system of claim 26 wherein the second telephony device comprises a fax.

37. (Original) The signal transmission system of claim 26 wherein the second telephony device comprises a modem.

38. (Original) The signal transmission system of claim 26 wherein the encoded information comprises voice signals.

39. (Original) The signal transmission system of claim 38 wherein the signal processing system further comprises a voice activity detector which suppresses the voice signals without speech.

40. (Previously Presented) The signal transmission system of claim 39 wherein the signal processing system further

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comprises a comfort noise estimator which generates comfort noise parameters when the voice activity detector suppresses the voice signals, said comfort noise parameters being selectively output on the packet based network.

41. (Original) The signal transmission system of claim 26 wherein the signal processing system further comprising a decoder capable of decoding packets of information from the packet based network.

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42. (Original) The signal transmission system of claim 41 wherein the information packets include voice signals, the signal processing system further comprising a voice activity detector which detects the voice signals without speech, and a comfort noise generator which inserts comfort noise in place of the voice signals without speech.

43. (Original) The signal transmission system of claim 42 wherein the signal processing system further comprises a comfort noise estimator which generates comfort noise parameters from at least a portion of the voice signals without speech, the comfort noise generator being responsive to the comfort noise parameters.

44. (Original) The signal transmission system of claim 41 wherein the information packets include voice signals, the signal processing system further comprising a voice activity detector which detects lost voice signals, and a lost packet

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recovery engine which processes the voice signals to compensate for the lost voice signals.

45. (Original) The signal transmission system of claim 26 wherein the signal processing system further comprises a jitter buffer capable of receiving packets of information of varying delay from the packet based network and compensating for the delay variation of the information packets.

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46. (Original) The signal transmission system of claim 45 wherein the jitter buffer outputs an isochronous stream of the received information.

47. (Original) The signal transmission system of claim 45 wherein the jitter buffer comprises a queue which buffers the received information for a holding time, and a voice synchronizer which adaptively adjusts the holding time of the queue.

48. (Currently Amended) A method of transmitting signals, comprising:

receiving a ~~first information~~ voiceband signal ~~having a first format~~ from a first telephony device via a communication medium;

receiving a ~~second information~~ modulated modem data signal ~~having a second format~~ from a second telephony device via the communication medium, ~~the second format being a modulated format~~;

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discriminating between the ~~first information~~ voiceband signal and the ~~second information signal~~ modulated modem data;

selectively encoding the ~~first information~~ voiceband signal;

selectively demodulating the ~~second information signal~~ modulated modem data; and

selectively outputting onto a packet based network the encoded ~~information~~ voiceband signal and the demodulated ~~information~~ modem data.

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Cont.
49. (Cancelled)

50. (Currently Amended) The method of claim 48 wherein the ~~second format~~ voiceband signal comprises information modulated by a voiceband carrier.

51. (Currently Amended) The method of claim 48 wherein the information having the first format is transmitted on a ~~{}a{}{}~~ switched circuit network.

52. (Original) The method of claim 51 wherein the switched circuit network comprises a public switching telephone network.

53. (Original) The method of claim 48 wherein the packet based network comprises internet protocol.

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54. (Original) The method of claim 48 wherein the packet based network comprises frame relay.

55. (Original) The method of claim 48 wherein the packet based network comprises asynchronous transfer mode.

56. (Original) The method of claim 48 wherein the packet based network comprises a time division multiplexing network.

57. (Original) The method of claim 48 wherein the first telephony device comprises a telephone.

58. (Previously Presented) The method of claim 48 wherein the second telephony device comprises a fax.

59. (Currently Amended) The method of claim 48 wherein the second telephony device comprises a modem.

60. (Previously Presented) The method of claim 48 wherein the first format comprises pulse code modulation.

61. (Previously Presented) The method of claim 48 wherein the second format comprises information modulated by a voiceband carrier.

62. (Original) The method of claim 48 wherein the discriminated information includes voice signals.

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63. (Original) The method of claim 60 further comprising suppressing the voice signals when the voice signals do not comprise speech.

64. (Original) The method of claim 61 wherein the suppression of the voice signals comprises generating comfort noise parameters in place thereof.

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65. (Original) The method of claim 48 further comprising receiving information packets of varying delay from the packet based network, and compensating for the delay variation of the information packets.

66. (Original) The method of claim 63 wherein the information packet compensation comprises generating an isochronous stream of the information.

67. (Original) The method of claim 64 wherein the isochronous stream generation comprises adaptively buffering the information.

68. (Original) The method of claim 48 further comprising receiving packets of voice signals from the packet based network, identifying the received voice signals without speech, and inserting comfort noise in place of the identified voice signals without speech.

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69. (Original) The method of claim 66 wherein the comfort noise insertion comprises estimating comfort noise in response to at least a portion of the received voice signals without speech.

70. (Original) The method of claim 48 further comprising receiving packets of voice signals from the packet based network, detecting lost voice signals, decoding the received voice signals, and processing the decoded voice signals to compensate for the lost voice signals.

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71. (Currently Amended) A signal processing system for processing a plurality of signals ~~having a plurality of signal components~~, each of the plurality of signals ~~components~~ having a different format, the signal processing system comprising:

receiving means for receiving one of the plurality of signals at a respective input port;

detecting means for detecting the format for the received signal;

encoding means for selectively encoding a first one of the plurality of signal components having a first format the received signal, if the detected format for the received signal indicates a voiceband signal;

demodulating means for demodulating a second one of the plurality of signal components of the plurality of signal components, the second one of the plurality of signal components being modulated the received signal, if the detected format for the received signal is a modulated modem data; and

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channel interface means for selectively outputting onto a packet based network the encoded ~~information~~ voiceband signal and the demodulated ~~information~~ modem data.

72. (Cancelled)

73. (Currently Amended) The signal processing system of claim 71 wherein the ~~second one of the plurality of signal components~~ received signal has a second format and wherein the second format comprises information modulated by a voiceband carrier.

74. (Previously Presented) The signal processing system of claim 71 wherein the encoded information comprises voice signals.

75. (Previously Presented) The signal processing system of claim 74 further comprising suppression means for suppressing the voice signals without speech.

76. (Previously Presented) The signal processing system of claim 75 further comprising means for generating comfort noise parameters when the suppression means suppresses the voice signals, said comfort noise parameters being selectively output onto the packet based network.

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77. (Previously Presented) The signal processing system of claim 71 further comprising means for decoding packets of information from the packet based network.

78. (Previously Presented) The signal processing system of claim 77 wherein the information packets include voice signals, the signal processing system further comprising means for detecting the voice signals without speech, and noise generation means for inserting comfort noise in place of the voice signals without speech.

79. (Previously Presented) The signal processing system of claim 78 further comprising means for generating comfort noise parameters from at least a portion of the voice signals without speech, the noise generation means being responsive to the comfort noise parameters.

80. (Previously Presented) The signal processing system of claim 77 wherein the information packets include voice signals, the signal processing system further comprising means for detecting lost voice signals, and means for processing the voice signals to compensate for the lost voice signals.

81. (Previously Presented) The signal processing system of claim 71 further comprising compensation means for receiving packets of information of varying delay from the packet based network and compensating for the delay variation of the information packets.

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82. (Previously Presented) The signal processing system of claim 81 wherein the compensation means comprises queue means for buffering the received information for a holding time, and means for adaptively adjusting the holding time of the received information.

83. (Currently Amended) Computer-readable media embodying a program of instructions executable by a computer to perform a method of processing a plurality of signals ~~having a plurality of signal components~~, each of the plurality of signals ~~components~~ having a different format, the method comprising:

receiving one of the plurality of signals at a respective input port;

detecting the format for the received signal;

selectively encoding a first one of the plurality of signal components having a first format;

~~selectively demodulating a second one of the plurality of signal components, the second one of the plurality of signal components being modulated~~ the received signal, if the detected format for the received signal indicates a modulated modem data;

selectively encoding the received signal, if the detected format for the received signal indicates a voiceband signal; and

selectively outputting onto a packet based network the encoded ~~information~~ voiceband signal and the demodulated ~~information~~ modem data.

84. (Cancelled)

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85. (Currently Amended) The computer-readable media of claim 83 wherein the ~~second one of the plurality of signal components~~ received signal has a second format and wherein the second format comprises information modulated by a voiceband carrier.

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86. (Previously Presented) The computer-readable media of claim 83 wherein the extracted information includes voice signals.

87. (Previously Presented) The computer-readable media of claim 86 wherein the method further comprises suppressing the voice signals when the voice signals do not comprise speech.

88. (Previously Presented) The computer-readable media of claim 87 wherein the suppression of the voice signals comprises generating comfort noise parameters in place thereof.

89. (Previously Presented) The computer-readable media of claim 83 wherein the method further comprises receiving information packets of varying delay from the packet based network, and compensating for the delay variation of the information packets.

90. (Previously Presented) The computer-readable media of claim 89 wherein the information packet compensation comprises generating an isochronous stream of the information.

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91. (Previously Presented) The computer-readable media of claim 90 wherein the isochronous stream generation comprises adaptively buffering the information.

92. (Previously Presented) The computer-readable media of claim 83 wherein the method further comprises receiving packets of voice signals from the packet based network, identifying the received voice signals without speech, and inserting comfort noise in place of the identified voice signals without speech.

93. (Previously Presented) The computer-readable media of claim 92 wherein the comfort noise insertion comprises estimating comfort noise in response to at least a portion of the received voice signals without speech.

94. (Previously Presented) The computer-readable media of claim 83 wherein the method further comprises receiving packets of voice signals from the packet based network, detecting lost voice signals, decoding the received voice signals, and processing the decoded voice signals to compensate for the lost voice signals.